IN THE SPECIFICATION:

Please amend the specification as follows:

On page 1, please amend the following paragraph:

"The present invention is a continuation-in-part of Serial No. [——] [10/012,002], filed November 30, 2001, Serial No. 10/000,991, filed November 14, 2001, Serial No. 10/029,319, filed October 17, 2001, 09/943,343, filed August 29, 2001, 09/854,097, filed May 11, 2001, Serial No. 09/837,150, filed April 18, 2001, Serial No. 09/834,840, filed April 13, 2001, Serial No. 09/794,782, filed February 27, 2001, Serial No. 09/771,789, filed January 29, 2001, Serial No. 09/768,753, filed January 23, 2001, Serial No. 09/684,629, filed October 6, 2000, Serial No. 09/597,812, filed June 19, 2000 and Serial No. 09/473,852, filed December 27, 1999. This invention relates to gas discharge lasers and in particular to high repetition rate gas discharge lasers."

On page 32, please amend the following paragraph:

"As explained in U.S. Patent Nos. 5,025,446 and U.S. Patent No. 5,978,394, prior art devices were required to analyze a large mass of PDA data pixel intensity data representing interference fringes produced by etalon 184 an photodiode array 180 in order to determine center line wavelength and bandwidth. This was a relatively time consuming process even with a computer processor because about 400 pixel intensity values had to be analyzed to look for and describe the etalon fringes for each calculation of wavelength and bandwidth. A preferred embodiment of the present invention greatly speeds up this process by providing a [PDA 402] ~~processor~~ for finding the important fringes which operates in parallel with the processor, microprocessor 400, calculating the wavelength information."

On page 33 and continuing on page 34, please amend the following paragraph:

"Specific steps in the process of calculating center wavelength and bandwidth are as follows:

1) With PDA 180 clocked to operate at 2.5 MHz, PDA 180 is directed by processor 400 to collect data at a from pixels 1 to 600 at a scan rate of 4,000 Hz and to read pixels 1 to 1028 at a rate of 100 Hz.

2) The analog pixel intensity data produced by PDA 180 is converted from analog intensity values into digital 8 bit values (0 to 255) by analog to digital converter 410 and the digital data are stored tempor[ar]ily in RAM buffer 408 as 8 bit values representing intensity at each pixel of photodiode array 180.

3) Programmable logic device 402 analyzes the data passing out of RAM buffer 408 continuously on an almost real time basis looking for fringes, stores all the data in RAM memory 406, identifies all fringes for each pulse, produces a table of fringes for each pulse and stores the tables in RAM 406, and identifies for further analysis one best set of two fringes for each pulse. The technique used by logic device 402 is as follows:

A) PLD 402 analyzes each pixel value coming through buffer 408 to determine if it exceeds an intensity threshold while keeping track of the minimum pixel intensity value. If the threshold is exceeded this is an indication that a fringe peak is coming. The PLD identifies the first pixel above threshold as the "rising edge" pixel number and saves the minimum pixel value of the pixels prece[e]ding the "rising edge" pixel. The intensity value of this pixel is identified as the "minimum" of the fringe.

B) PLD 402 then monitors subsequent pixel intensity values to search for the peak of the fringe. It does this by keeping track of the highest intensity value until the intensity drops below the threshold intensity.

C) When a pixel having a value below threshold is found, the PLD identifies it as the falling edge pixel number and saves the maximum value. The PLD then calculates the "width" of the fringe by sub[s]tracting the rising edge pixel number from the falling edge pixel number.

D) The four values of rising edge pixel number, maximum fringe intensity, minimum fringe intensity and width of the fringe are stored in the circular table of fringes section of RAM memory bank 406. Data representing up to 15 fringes can be stored for each pulse although most pulses only produce 2 to 5 fringes in the two windows.

E) PLD 402 also is programmed to identify with respect to each pulse the "best" two fringes for each pulse. It does this by identifying the last fringe completely within the 0 to 199 window and the first fringe completely within the 400 to 599 window."

On page 46, please amend the following paragraph:

"Specific techniques useful for controlling wavelength and bandwidth are described in the following patent applications which are incorporated by reference herein U.S. Serial No. 09/794,782, filed February 27, 2001, entitled "Laser Wavelength Control With Piezoelectric Driver", U.S. Serial No.: [———] 10/027,210, filed December 21, 2001, entitled "Laser Wavelength Control With Piezoelectric Driver" and U.S. Serial No.: [———] 10/036,925, filed December 21, 2001, entitled "Laser Spectral Engineering For Lithographic Process".

On page 48 and continuing on page 49, please amend the following paragraph:

"Improved Seals

Applicants have discovered major advantages in providing an extremely "clean" beam path. Laser optics tend to deteriorate rapidly in the presence of high energy ultraviolet radiation combined with many forms of contamination including oxygen. Preferred techniques for enclosing the beam path are described in U.S. Patent Application Serial No. [———] [10/000,991] filed November 14, 2001, entitled "Gas Discharge Laser With Improved Beam Path" which is incorporated by reference herein. FIGS. 19C, D, E and F are extracted from that application. FIG. 19C is a drawing showing bellows seals between the various components of gas discharge system similar to the master

oscillator is described above. FIG. 19D shows a modification including a bellows arrangement to the LNP stepper motor to seal the interface between the motor and the LNP enclosure. FIG. 19E shows a thermally decoupled aperture for the LNP which minimizes heating in the LNP and also encloses the LNP entrance so that it can be purged with relatively inexpensive helium. Helium exits the LNP through a chamber window unit as shown at 95 in FIG. 19C. FIGS. 19F 1, 2, 3, 4 and 5 show easy sealing bellows seal used to provide seals between the laser modules but allowing quick easy decoupling of the modules to permit quick module replacement. FIG. 19G shows a special purge arrangement to purge the high intensity portion of a wavemeter. This special purge is described in a following section."

On page 51 and continuing on page 52, please amend the following paragraph:

"Constant Optical Parameters

As lithography lasers age optical beam quality characteristics can change. Usually, quality tends to deteriorate slowly. When the beam quality no longer meets specifications even after service, replacement of major components (such as the laser chamber, the LNP and/or the wavemeter) is normally necessary. Thus, over the life of the laser beam quality may vary substantially within specification ranges. This could be a problem for integrated circuit lithographers which utilize lithography equipment designed for optical quality laser beams. The result of "better" than normal laser quality could result in an undesirable variation in integrated circuit quality. One solution is to provide a laser system where beam quality remains substantially constant over laser life. This may be accomplished using techniques described in U.S. Patent Application Serial No. [———] [10/027,210] filed concurrently with this application where the piezoelectric driver turning mirror can be used to provide wavelength stability values and bandwidth values corresponding to expected nominal values rather than the best values the laser is capable of. Pulse energy can also be controlled using the feedback controls described above to maintain energy stability values at an expected norm rather than the best possible. Fluorine concentration and laser gas pressure can also be regulated to produce expected beam quality values rather than the most stable values of pulse energy and wavelength and the narrowest possible bandwidth values."